

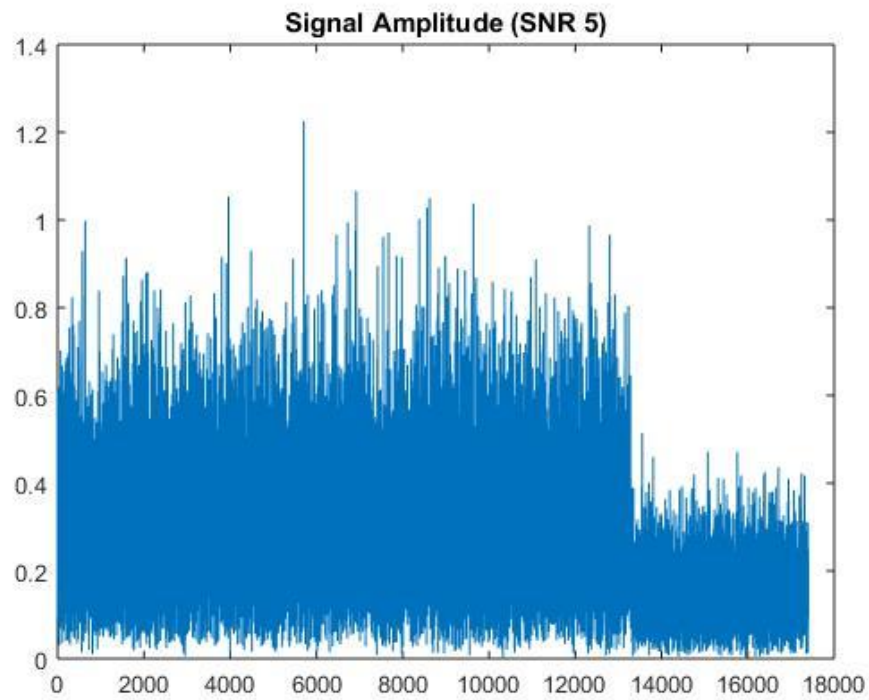
## Lab3 Interference Nulling

0656511 黃誠發

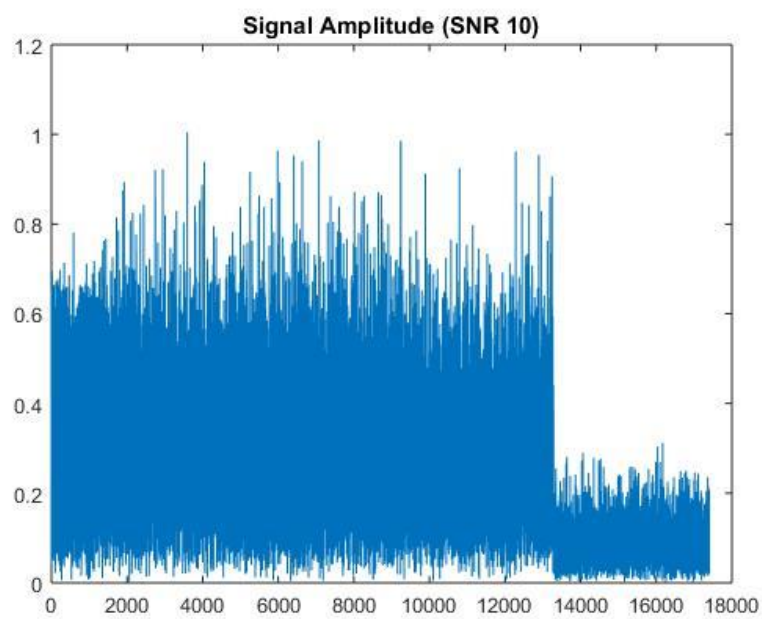
- Figures

- I. Amplitude of the signal

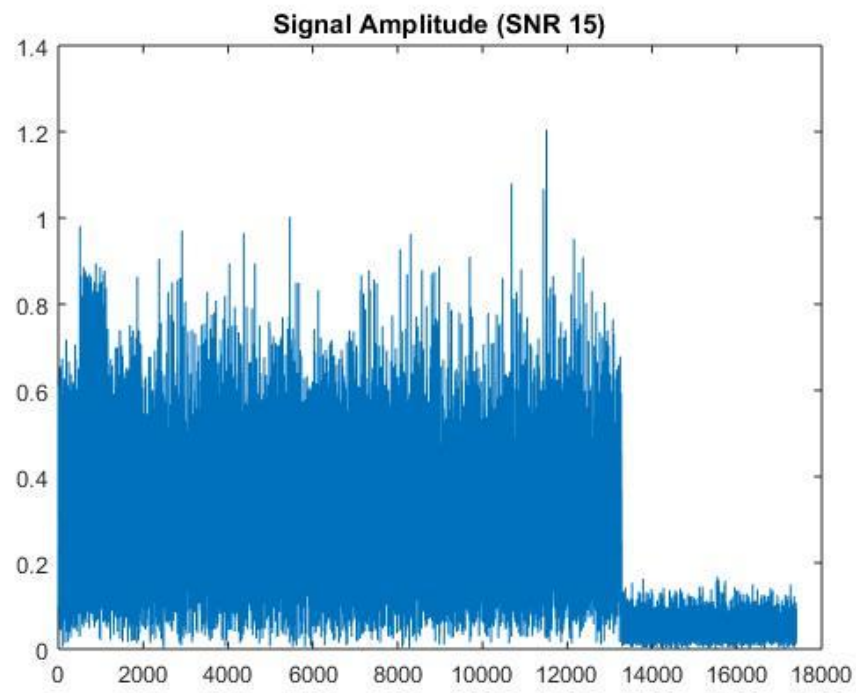
- A. SNR 5



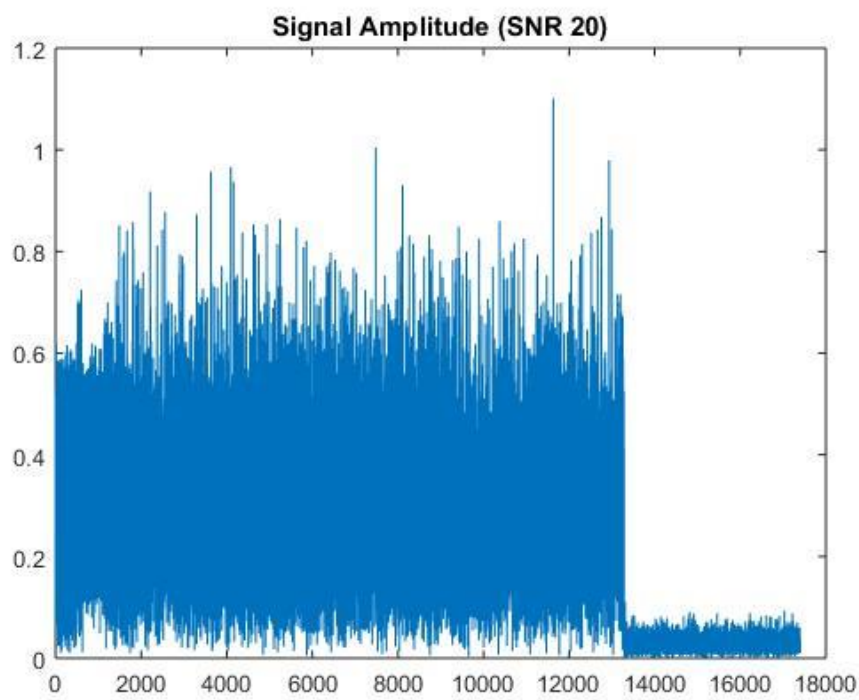
- B. SNR 10



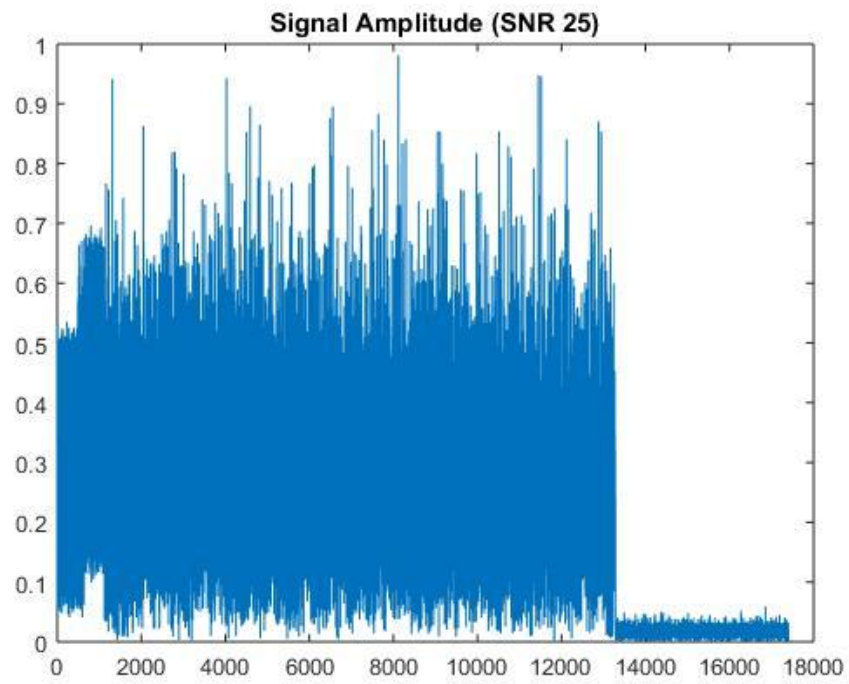
C. SNR 15



D. SNR 20



## E. SNR 25

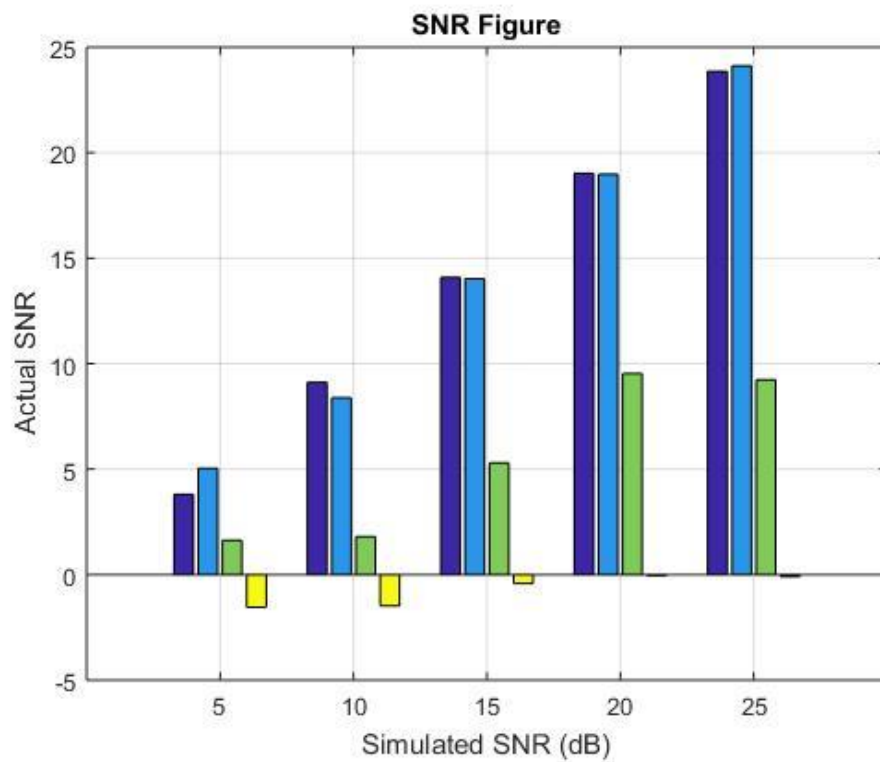


## II. SNR of the signal

### A. The Actual SNR

Simulated SNR	Tx1 only	Tx2 only	Combined w/o	Combined w/
5	3.8046	5.0348	1.6301	-1.5457
10	9.1129	8.3794	1.8018	-1.4786
15	14.0860	14.0277	5.3036	-0.4151
20	19.0163	18.9786	9.5300	-0.0429
25	23.8513	24.1189	9.2376	-0.0890

B. Figure



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● Code specification

■ **signal\_gen.m**

- I. Generate two random channels:
  - A. line 113 to 117
- II. Generate w1 and w2 with normalization:
  - A. line 121 to 126
- III. Modified the sts and lts before the ifft:
  - A. line 146 to 150
  - B. line 157 to 161
- IV. Generate preamble1 and preamble2
  - A. line 167 and 168
- V. Generate the tx1 and tx2 and the transmitted signal
  - A. line 223 to 319
  - B. do the same as the lab 1 twice
- VI. Generate the signal with noise
  - A. line 420 to 429

### ■ decode.m

- I. Turn off the CFO and SFO parameters for simulation
- II. Load the bin file we want to decode
  - A. line 131
- III. Channel estimation:
  - A. line 181 to 241
  - B. done the procedure twice for estimation for H1 and H2
  - C. Note that the  $rx\_lts1\_f1 - rx\_lts2\_f2$  must be 0
- IV. Payload processing
  - A. line 247 to 324
  - B. remove CP and take fft for the payload
  - C. separate the four parts of the data according to the index we designed
- V. Calculate the SNR for each part
  - A. line 338 to 352

### ■ sim.m

- I. call the signal generation with the parameter SNR
- II. call the decode function assign the actual SNR back to the sim.m
- III. plot all the amplitude of signal and the actual SNR for all situation and segments